

Application No. 10/808,852
Amendment dated May 4, 2005
Reply to Office Action of November 18, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A method for forming an interbody orthopedic implant having an exterior surface with a plurality of surface projections adapted for contact with bone, including adjacent bones and bone portions, the method comprising the steps of:
 - providing the implant comprising a leading end for introduction of the orthopedic implant into the bone, an opposite trailing end, spaced apart sides therebetween, and a mid-longitudinal axis passing through the leading and trailing ends, an exterior surface between said leading and trailing ends and said spaced apart sides; and
 - forming surface projections as part of the exterior surface of the implant:
 - at least a first and a second surface projection each having a first facet configuration with at least one forward facet directed at least in part toward the leading end and at least one rearward facet directed at least in part toward the trailing end, said forward facet and said rearward facet having a length and a slope, the length of said forward facet being longer than the length of said rearward facet, the slope of said rearward facet being steeper than the slope of said forward facet, said first and second surface projections each having a peak along a first line that is transverse to the mid-longitudinal axis of said implant; and
 - at least a third and a fourth surface projection each having a second facet configuration with at least one forward facet directed at least in part toward the leading end and at least one rearward facet directed at least in part toward the trailing end, said forward facet and said rearward facet of said second facet configuration having a length and a slope, the length of said forward facet of said

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second facet configuration being longer than the length of said rearward facet of said second facet configuration, the slope of said rearward facet of said second facet configuration being steeper than the slope of said forward facet of said second facet configuration, said third and fourth surface projections each having a peak along a second line that is transverse to the mid-longitudinal axis and offset from the first line transverse to the mid-longitudinal axis, the second facet configuration of the third and fourth surface projections being different from the first facet configuration of the first and second surface projections.

2. (original) The method of claim 1, wherein the step of forming includes at least one of the sub-steps of grinding, milling, burning, lasering, burnishing, electric discharge machining, broaching, and machining to form said surface projections.
3. (original) The method of claim 1, wherein the steps of providing and forming include the sub-step of casting to form said implant with said surface projections.
4. (original) The method of claim 1, wherein said forming step includes the sub-step of orienting said surface projections relative to one another to form an array over at least a portion of said exterior surface of said implant.
5. (original) The method of claim 1, wherein said forming step includes the sub-step of orienting said surface projections to be geometrically disposed relative to one another over at least a portion of said exterior surface of said implant.
6. (original) The method of claim 1, wherein the step of providing the implant includes providing an implant having at least one opening in each of the upper and lower surfaces in communication with one another, the openings being configured to permit for the growth of bone from vertebral body to adjacent vertebral body through the implant.
7. (original) The method of claim 6, further comprising the step of combining the implant with at least one of bone, bone morphogenetic proteins, hydroxyapatite, and genes coding for the production of bone.
8. (original) The method of claim 6, wherein the step of providing the implant includes providing an implant having an internal chamber between the upper and

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lower surfaces and in communication with at least one opening in each of the upper and lower surfaces, the internal chamber being adapted to contain bone growth promoting materials.

9. (original) The method of claim 1, wherein at least a fifth and a sixth of said surface projections formed during the step of forming each have a third facet configuration with at least one forward facet directed at least in part toward the leading end and at least one rearward facet directed at least in part toward the trailing end, said forward facet and said rearward facet of said third facet configuration having a length and a slope, the length of said forward facet of said third facet configuration being longer than the length of said rearward facet of said third facet configuration, the slope of said rearward facet of said third facet configuration being steeper than the slope of said forward facet of said third facet configuration, said fifth and sixth surface projections each having a peak along a third line that is transverse to the mid-longitudinal axis and off-set from the first and second lines, the third facet configuration of the fifth and sixth surface projections being different from the first facet configuration of the first and second surface projections and the second facet configuration of the third and fourth surface projections.
10. (original) The method of claim 1, wherein the step of forming includes forming said forward facets of said first and second surface projections to face the same direction.
11. (original) The method of claim 1, wherein the step of forming includes forming at least one of the surface projections along the first line to have a maximum height from the exterior surface of the implant that is substantially the same as the maximum height of one of the surface projections along the second line.
12. (original) The method of claim 1, wherein the step of forming includes forming at least three surface projections having the first facet configuration along the first line and forming at least three surface projections having the second facet configuration along the second line.

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13. (original) The method of claim 1, wherein the step of forming includes forming at least four surface projections having the first facet configuration along the first line and forming at least four surface projections having the second facet configuration along the second line.
14. (original) The method of claim 1, wherein the step of forming includes forming at least five surface projections having the first facet configuration along the first line and forming at least five surface projections having the second facet configuration along the second line.
15. (currently amended) A method for forming an interbody orthopedic implant having a plurality of surface projections adapted for contact with bone, including adjacent bones and bone portions, the method comprising the steps of:

providing the implant comprising a leading end for introduction of the orthopedic implant into the bone, an opposite trailing end, and spaced apart sides therebetween, opposite upper and lower surfaces between said leading and trailing ends and said spaced apart sides, an exterior surface between said leading and trailing ends and said spaced apart sides; and

forming a plurality of surface projections as part of the exterior surface of the implant, each of the surface projections having a base, at least two of the surface projections each having at least one forward facet directed at least in part toward the leading end and at least one rearward facet directed at least in part toward the trailing end, said rearward facet terminating at a first location proximate the base, said rearward facet terminating at a second location proximate said forward facing facet, the first location being closer to the leading end of the implant than the second location
~~said forward facet and rearward facet being formed to have a length and a slope, the length of said forward facet being longer than the length of said rearward facet, the slope of said rearward facet being steeper than the slope of said forward facet, said rearward facet having an included angle greater than 90 degrees between said rearward facet and the base of the surface projection, each of said at least two surface projections being~~

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formed to have opposed side facets extending from the base and being directed generally toward said spaced apart sides of the implant, respectively, said side facets being located between said forward facet and said rearward facet of each of said at least two surface projections.

16. (original) The method of claim 15, wherein the step of forming includes one of the sub-steps of grinding, milling, burning, lasering, burnishing, electric discharge machining, and broaching to form said surface projections.
17. (original) The method of claim 15, wherein the steps of providing and forming include the sub-step of casting to form said implant with said surface projections.
18. (original) The method of claim 15, wherein said forming step includes the sub-step of orienting said projections relative to one another to form an array.
19. (original) The method of claim 15, wherein said forming step includes the sub-step of orienting said projections to be geometrically disposed relative to one another.
20. (original) The method of claim 15, wherein said side facets have a maximum width therebetween at the base, the base of at least one of said surface projections being spaced apart from a base of another of said surface projections by a distance no greater than one-half the maximum width of at least one of said at least two surface projections.
21. (original) The method of claim 15, wherein the step of forming includes forming the forward facets of at least two of said at least two surface projections to face the same direction.
22. (original) The method of claim 15, wherein the step of forming includes forming said side facets of each of said at least two surface projections to converge toward each other in a direction away from the base.
23. (original) The method of claim 15, wherein the step of forming includes forming said at least two surface projections to have substantially the same maximum height from the surface of said implant.

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24. (original) The method of claim 15, wherein the step of providing the implant includes providing an implant having at least two openings in said exterior surface in communication with one another, the openings being configured to permit for the growth of bone from one bone portion to another bone portion through the implant.
25. (original) The method of claim 24, further comprising the step of combining the implant with at least one of harvested bone, bone morphogenetic proteins, hydroxyapatite, and genes coding for the production of bone.
26. (original) The method of claim 24, wherein the step of providing the implant includes providing an implant having an internal chamber in communication with the at least two openings in said exterior surface, the internal chamber being adapted to contain bone growth promoting materials.
27. (original) The method of claim 26, further comprising the step of combining the implant with at least one of harvested bone, bone morphogenetic proteins, hydroxyapatite, and genes coding for the production of bone.
28. (original) The method of claim 15, wherein the step of forming the plurality of surface projections includes using a milling instrument.
29. (original) The method of claim 28, wherein the milling instrument includes a cutting tool with a V-shaped profile.